IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BOARD OF PATENT APPEALS AND INTERFERENCES

In Re Application of:

MARTIN H. GRAHAM

Application No.: 09/221,291

Filed: December 23, 1998

For: **Biphase Multiple Level Communications**

Art Unit: 2611

Examiner: Burd, Kevin Michael

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37(a)

Dear Sir:

Applicant hereby submits this Brief in support of its appeal from a decision by the examiner, mailed on January 25, 2008, in the above-captioned case. The claims have been rejected twice since the last RCE, and as a result applicant hereby files this appeal in response to the rejection of the claims. The applicant respectfully requests consideration in this appeal by the Board of Patent Appeals and Interferences and request allowance of the above-captioned patent application.

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(i) REAL PARTY IN INTEREST

And Yet, Inc., a California Corporation

(ii) RELATED APPEALS AND INTERFERENCES

This application was previously appealed as *Ex Parte* MARTIN H. GRAHAM, Appeal 2006-2122. A copy of the board's decision, decided on June 21, 2007, is attached in the Related Proceedings Appendix.

(iii) STATUS OF CLAIMS

Claims 19-25 are pending.

Claims 19-22, 24, and 25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fullerton et al. (U.S. Patent No. 5,677,927) (hereinafter "Fullerton") in view of Omura et al. (U.S. Patent No. 5,157,686) (hereinafter "Omura") further in Devon (U.S. Patent No. 5,692,127) (hereinafter "Devon"). Claim 23 is rejected in view of an additional reference, Pernyeszi (U.S. Patent No. 5,969,547) (hereinafter "Pernyeszi").

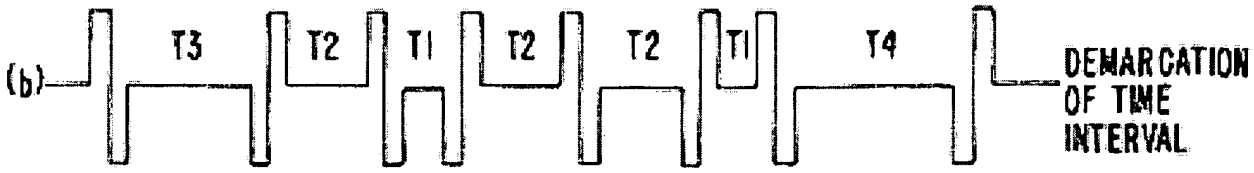
The applicant respectfully appeals from the office action dated January 25, 2008 with respect to all the pending claims, claims 19-25. A copy of the claims as they currently stand is attached in the Claims Appendix.

(iv) STATUS OF AMENDMENTS

There are no pending amendments to the claims. Claims 19-25 were submitted on January 8, 2004. The applicant filed a Request for Continues Examination and amended the claims to cover a continuous encoding process rather than just two bit patterns on August 14, 2007 following the Board's decision of June 21, 2007. The examiner issued a Non-Final Office Action on September 27, 2007 and a Final Office Action on January 28, 2008. The claims have remained unchanged since August 14, 2007.

(v) SUMMARY OF CLAIMED SUBJECT MATTER

The application describes a method for encoding data for transmission. The claimed invention, for all the claims except claim 22 and 23, is readily seen from Figure 2b of the application, reproduced immediately below.



Graham Figure 2b

In the figure there are a series of biphasic pulses separated by time. Importantly, the application teaches using first biphasic pulses ("negative pulses") defined as a pulse having a first portion that is positive and then a second portion that is negative. Second biphasic pulses ("positive pulses") are defined as pulses that have a first portion that is negative and then a second portion that is positive. Overall, the pulses alternate "polarity" going between negative and positive pulses. This is illustrated in Figure 2b where it is shown that the biphasic pulses alternate; that is, there is a sequence of a negative pulse, positive pulse, negative pulse, positive pulse, etc. These pulses themselves do not necessarily indicate data. Rather, the time between pulses is the indication of the data. Four different times (T1, T2, T3, and T4) are shown in Figure 2b. Each of these times represents a plurality of bits. For instance, T1 can equal 00, T2=01, T3=10, and T4=11. Thus, the duration, or dead time, between biphasic pulses determines what data is transmitted.

There are advantages to time modulation using alternating biphasic pulses, which is a central idea of the present invention. Alternating polarity, as described in the application, reduces interference between consecutive biphasic pulses so that the signal received can be more easily recovered.

This is the sum and substance of claims 19, 20, 21, 24, and 25.

The dependent claims 22 and 23 add the concept that the biphasic pulses, themselves, can also be used to transmit data by varying their amplitude (claim 22) and by varying their pulse width (claim 23).

(vi) GROUNDS OF REJECTIONS TO BE REVIEWED ON APPEAL

Claims 19-22, 24, and 25 were rejected under 35 U.S.C. § 103(a) over Fullerton in view of Omura and Devon.

Claim 23 added the reference Pernyeszi.

(vii) ARGUMENT

All the claims stand or fall together with respect to 35 U.S.C. § 103.

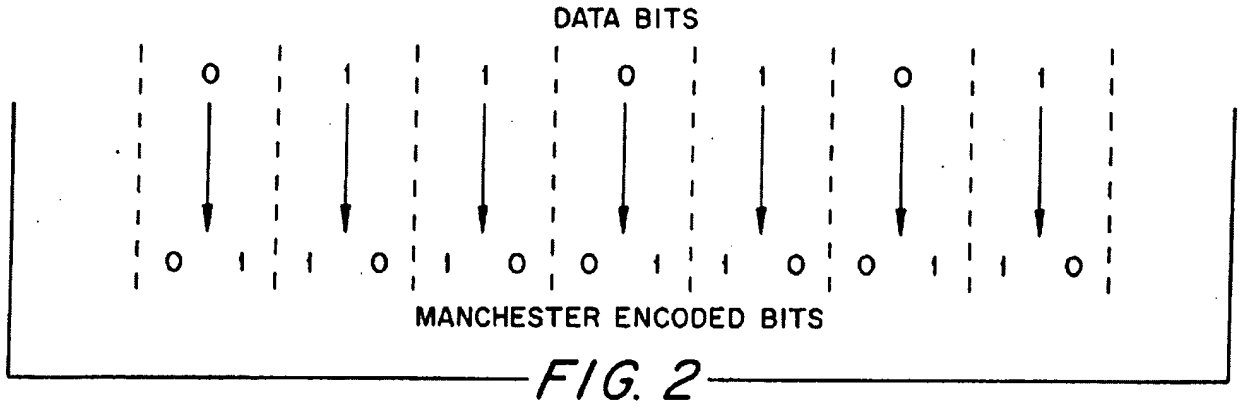
a. The claims are patentable over Fullerton in view of Omura and Devon

Fullerton discloses subcarrier modulation; for instance, Fullerton describes frequency modulation and amplitude modulation. The modulated subcarrier time shifts pulses resulting in a pulse position modulated (PPM) signal; however, Fullerton does not fully describe PPM encoding. Fullerton also describes direct digital modulation using Manchester encoding or combining the use of the PPM and the Manchester encoding. Combining PPM and Manchester encoding does not teach the applicant's invention nor meet the elements in the claim language.

Omura describes Manchester encoding and the use of PPM to represent Manchester encoded data bits. (Omura Col. 9, beginning l. 35). Manchester encoding, the applicant concedes, is well known and uses one biphasic pulse to represent one binary state, and a second biphasic pulse to represent the other binary state. The difference between pulses is whether its first portion is positive or negative. Applicant also concedes that alternating marks is a known

technique, but that technique is not the same as the alternating the polarity of biphasic pulses being taught in the applicant's invention.

The rejection relies on the Manchester encoded bits and, for example, in Figure 2 of Omura, the encoding of the data sequence 0110101. The rejection further states that "Omura specifically discloses the alternating of biphasic pulses in the Manchester encoded bits of the example shown in figure 2." (Final Office Action, mailed Jan. 25, 2008, p. 2.) No matter how you consider this sequence or where you place it, it does not teach alternating the polarity of biphasic pulses as present in the applicant's invention. The Manchester encoding of this sequence adds nothing to the combination of Fullerton and Omura since the resulting biphasic pulses do not show alternating the polarity of biphasic pulses as present in the applicant's invention.



Omura Figure 2

In Figure 2 of Omura, the polarity of the biphasic pulses representing the transmitted data alternate only when the data '01' or '10' is transmitted. In the applicant's invention, the biphasic pulses alternate regardless of the sequence of the encoded data. If the encoding system in Omura alternated pulses it would only be able to encode the binary value '01' or '10' repeated indefinitely. Such a modification of Omura would produce an inoperable result since any

encoding system must be able to encode binary sequences other than an infinite repetition of '01' or '10'. By relying on Omura to teach the alternating polarity of biphasic pulses in the applicant's invention, the rejection impermissibly "pick[s] and choose[s] from [Omura] only so much of it as will support [the rejection's] position, to the exclusion of other parts necessary to the full appreciation of what the reference fairly suggest to one of ordinary skill in the art." *In re Wesslau*, 353 F.2d 238, 241, 147 USPQ 391, 393 (CCPA 1965).

The applicant would also like to point out that the specific sequence of data being relied upon in the rejection from Figure 2 of Omura is a representation of random data. The fact there is any specific alternation of the biphasic pulses in Figure 2 is a complete happenstance. The sequence of data could have as easily been '0001111', in which case the only alternation of biphasic pulses would be between the third and the fourth pulse.

Devon describes pulse position modulation ("PPM") where multiple bits are represented by the position of a pulse in a PPM frame 400. The PPM frame 400 is divided into four pulse windows 402, 404, 406, and 408. "Each pulse window is associated with a symbol that represents the value of two bits. In the present example, pulse window 402, 404, 406, and 408 are associated with '00', '01', '10', and '11' respectively." (Devon Col. 5, ll. 61-64.) "[T]he signal 410, in which a pulse is sent during pulse window 402, communicates the value '00'." (Devon Col. 6, ll. 1-3.) Thus, in PPM it is the position of the pulse within the PPM frame that represents the value of the data being encoded. Figure 4 is exemplary of PPM encoding as described in Devon and is reproduced immediately below.

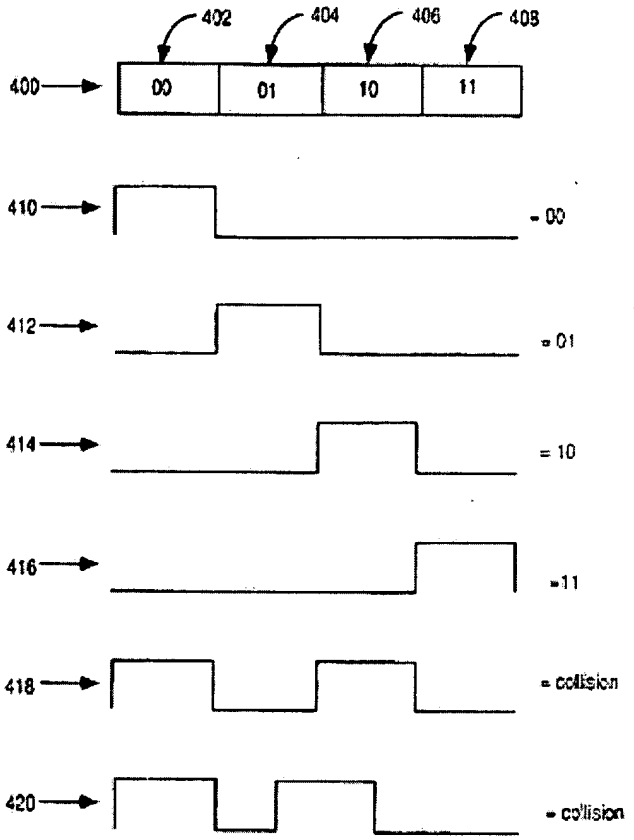
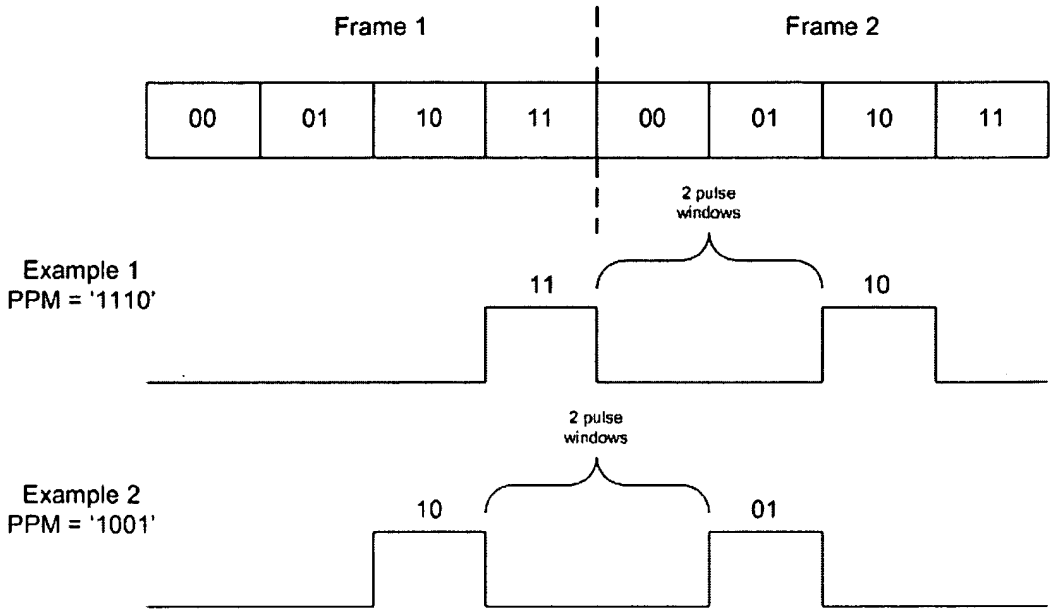


Fig. 4

Devon Figure 4

PPM is different from the time modulation encoding in the applicant's invention. In the applicant's invention it is the duration of time between two pulses that represents the data being encoded. This is demonstrated by the following figure showing the data '1110' and '1001' encoded in the PPM of Devon. Each signal contains two pulses and the time between the two pulses is two pulse windows. If each pulse window is representative of a time unit then a two-time-unit period would exist between each pulse. In the applicant's invention, a two-time-unit period between two pulses (T1) may represent the bits '00'. In Devon, a two-time-unit period between two pulses does not represent any data; rather it is the position of the pulse in the PPM frame that represents data. In short, Devon uses when a pulse occurs in a frame to encode data whereas the applicant teaches using the time between pulses to encode data.

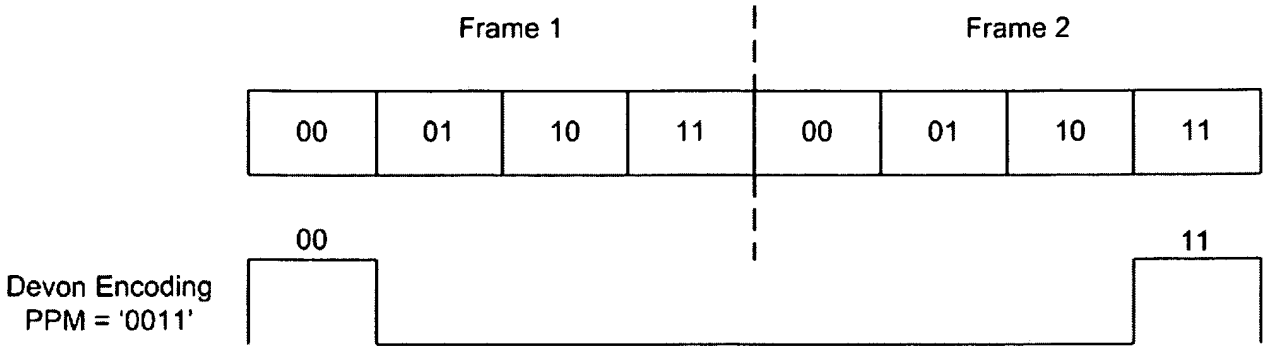


Exemplary Figure 1

This difference is further illustrated referring back to Figure 4 of Devon. A pulse may occur in one of four parts of a PPM frame. Assume that the pulse 410 occurs in the very first part of a PPM frame indicating the bits '00'. After the pulse 410 occurs, assume the next data to be transmitted are the bits '11'. With PPM, the PPM frame 400 must be first complete and then in the next PPM frame 410 a pulse occurs in the fourth pulse window of that PPM frame to indicate the transmission of '11'. In Devon, time is measured from the beginning of each frame.

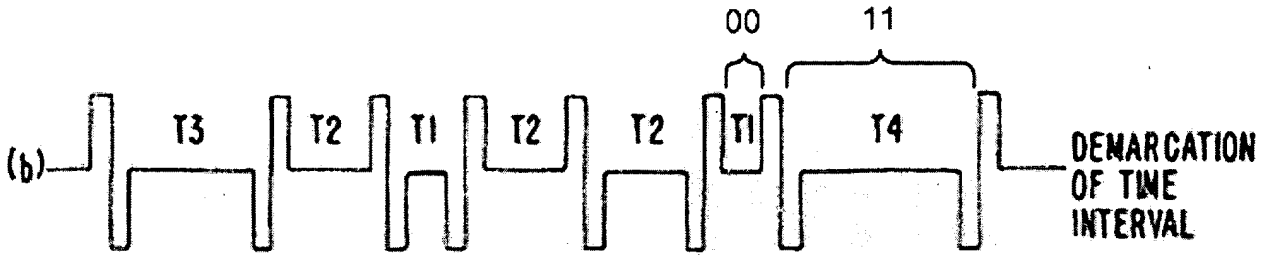
The same transmission, '0011', in the applicant's invention is represented by generating a positive pulse, waiting a period of time (T1), generating a negative pulse, waiting a period of time (T4), and then generating a positive pulse.

Immediately below is a figure showing a transmission representing '0011' in the PPM encoding of Devon.



Exemplary Figure 2

In contrast, one embodiment of a transmission representing '0011' in the applicant's invention is illustrated in Figure 2b of Graham by the data encoded in the time period T1 followed by the data encoded in the time period T4. A highlighted version of Figure 2b is shown immediately below.



Graham Figure 2b - Highlighted

Furthermore, Devon discloses that it is important in PPM that two pulses do not occur during the same PPM frame. If two pulses occur in the same PPM frame, it is assumed that there is an error (a collision) as shown by waveforms 418 and 420 in Figure 4. Similarly, as described in Fullerton, the frames are cross correlated to determine the frame's contents. This is a frame-by-frame analysis and is not the same as measuring the time between pulses. The rejection quotes Devon as disclosing "a receiving device decodes the PPM signals by measuring the time between each pulse received and the previous pulse" (Devon Col. 6, ll. 5-7.), but as explained above and illustrated in Exemplary Figure 1, Devon actually teaches measuring the time between the

beginning of a PPM frame and a pulse to determine in which pulse window the pulse occurred. This is not the same as "measuring the time between each pulse received and the previous pulse" as quoted by the rejection.

b. Conclusion

The combination of Fullerton, Omura, and Devon does not teach the applicant's invention nor does the combination meet the elements present in the language of the claims. Further, the addition of Pernyeszi does not teach the invention of claim 23.

Fee for Filing a Brief in Support of Appeal

Enclosed is authorization to charge our deposit account No. 02-2666 in the amount of $255.00 to cover the fee for filing of a brief in support of an appeal required under 37 C.F.R. 41.20(b)(2).

Charge Our Deposit Account

If there are any further charges not accounted for herein, please charge them to our deposit account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR, & ZAFMAN LLP

Dated: 7/8/08

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(viii) CLAIMS APPENDIX

1-18 (Cancelled)

19. (Previously presented) A method for encoding data bits for transmission comprising:

(a) generating a first biphasic pulse having a first portion of a first polarity followed by a second portion of a second polarity;

(b) waiting a first period of time following the second portion of the first biphasic pulse during which period of time no amplitude dependent data bits are encoding, the duration of the first period of time being selected to represent a first plurality of data bits;

(c) generating a second biphasic pulse following the period of time, the second biphasic pulse having a third portion of the second polarity followed by a fourth portion of the first polarity;

(d) waiting a second period of time following the fourth portion of the second biphasic pulse during which period of time no amplitude dependent data bits are encoding, the duration of the second period of time being selected to represent a second plurality of data bits;

(e) repeating steps (a) and (b) with a third period of time representing a third plurality of data bits; and

(f) repeating steps (c) and (d) with a fourth period of time representing a fourth plurality of data bits.

20. (Previously presented) The method of claim19, wherein each biphasic pulse has no DC component.

21. (Previously presented) The method of claim 20, wherein each of the portions of the first and second biphasic pulses are single polarity pulses having an amplitude and a pulse width.

22. (Previously presented) The method of claim 21, wherein the amplitude of the single polarity pulses represents at least one data bit.

23. (Previously presented) The method of claim 21, wherein the pulse width of each of the single polarity pulses represents at least one data bit.

24. (Previously presented) The method defined by claim 19, including the step of transmitting a signal generated by the steps of claim 19 onto a twisted pair line.

25. (Previously presented) A method for decoding data bits from a received signal comprising:

(a) detecting a first biphasic pulse having a first polarity, the first biphasic pulse having a first portion of a first polarity followed by a second portion of a second polarity;

(b) detecting a second biphasic pulse having a second polarity, the second biphasic pulse having a third portion of the second polarity followed by a fourth portion of the first polarity;

(c) measuring the time between the first and second biphasic pulses;

(d) correlating the measured time from step (c) to a plurality of data bits;

(e) detecting a third biphasic pulse of the first polarity;

(f) measuring the time between the second biphasic pulse and the third biphasic pulse;

(g) correlating the measured time from step (e) to a plurality of data bits; and

(h) repeating steps (a) through (g).

(ix) EVIDENCE APPENDIX

None

(x) RELATED PROCEEDINGS APPENDIX

A copy of the board's decision in *Ex Parte* MARTIN H. GRAHAM, Appeal 2006-2122, decided on June 21, 2007 is hereto attached.

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARTIN H. GRAHAM

Appeal 2006-2122
Application 09/221,291
Technology Center 2600

Decided: June 21, 2007

Before MICHAEL R. FLEMING, *Chief Patent Judge*, GARY V. HARKCOM, *Vice Chief Judge*, KENNETH W. HAIRSTON, LANCE LEONARD BARRY, and JEAN R. HOMERE *Administrative Patent Judges*.

BARRY, *Administrative Patent Judge*.

SUBSTITUTE DECISION ON APPEAL

I. STATEMENT OF THE CASE

A Patent Examiner rejected claims 19-22, 24, and 25 under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 5,999,848 ("Gord") and U.S. Patent No. 5,654,978 ("Vanderpool"). He also rejected claim 23 as over Gord;

Vanderpool; and U.S. Patent No. 5,969,547 ("Pernyeszi"). The Appellant appealed therefrom under 35 U.S.C. § 134(a).

An original panel consisting of Judges Hairston, Barry and Homere reversed. Pursuant to M.P.E.P. § 1214.04 (8th ed., rev. 5, Aug. 2006), the Examiner presented a request for rehearing, specifically asking that we affirm the rejections. The panel has been expanded in light of a substantial question presented as to what arguments we will consider on appeal. The panel has jurisdiction under 35 U.S.C. § 6(b).

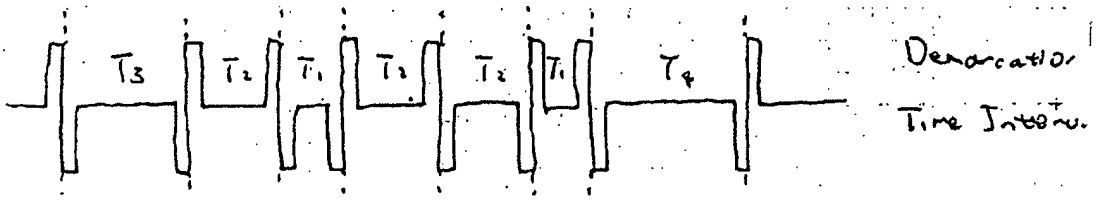
A. INVENTION

The invention at issue on appeal encodes and decodes digital data. According to the Appellant, U.S. Patent No. 5,696,790 ("the '790 patent") describes a method for transmitting digital data via a local area network ("LAN") using traditional phone wiring. The method allows computers or printers to operate in a LAN independently of, and transparently to, the operation of ordinary telephone service while sharing the same set of twisted pair lines. More specifically, the '790 patent transmits data in two states. A first signal having a first duration represents one digital state; a second signal having a second duration different from the first duration represents a second digital state. (Specification 1.)

The difference in lengths of the first signals and the second signals, however, results in a direct current ("DC") component in the transmission

line. The DC component affects normal operation of the telephone line. (*Id.*)

For its part, the Appellant's invention represents digital data by the time interval between consecutive biphasic pulses. More specifically, the invention uses biphasic pulses, which do not carry any DC component, to eliminate any DC component in the transmission line. (*Id.* 24.) Figure 2(b) of the Appellant's Specification follows.



The Figure shows a waveform that employs the Appellant's encoding scheme.

B. REPRESENTATIVE CLAIM

Claim 19, which represents the invention, follows (matter in brackets added).

> 19. A method for encoding data bits for transmission comprising:
>
> [1] generating a first biphasic pulse having a first portion of a first polarity followed by a second portion of a second polarity;

[2] waiting a period of time following the second portion of the first biphasic pulse during which period of time no amplitude dependent data bits are encoding, the duration of the period of time being selected to represent a plurality of data bits; and

[3] generating a second biphasic pulse following the period of time, the second biphasic pulse having a third portion of the second polarity followed by a fourth portion of the first polarity.

II. CLAIM GROUPING

"When multiple claims subject to the same ground of rejection are argued as a group by appellant, the Board may select a single claim from the group of claims that are argued together to decide the appeal with respect to the group of claims as to the ground of rejection on the basis of the selected claim alone. Notwithstanding any other provision of this paragraph, the failure of appellant to separately argue claims which appellant has grouped together shall constitute a waiver of any argument that the Board must consider the patentability of any grouped claim separately." 37 C.F.R. § 41.37(c)(1)(vii) (2005).[1]

Here, in the Appeal Brief, the Appellant states, "All the claims stand or fall together with respect to the 35 U.S.C. §103." (Br. 4.) Therefore, we select claim 19 as the sole claim on which to decide the appeal of claims 19-

[1] We cite to the version of the Code of Federal Regulations in effect at the time of the Appeal Brief. The current version (2006) is the same.

22, 24, and 25. With the aforementioned representation in mind, rather than reiterate the positions of the parties *in toto*, we focus on the issues therebetween.

III. PAIR OF BIPHASIC PULSES OF OPPOSITE POLARITY

The Examiner makes the following findings.

> [F]igure 8 of Gord shows the generation of biphasic pulses with alternating polarity. Gord discloses a first biphasic pulse having a first portion of a first polarity (the positive component of the INPUT DATA "1" pulse) and a second portion of a second polarity (the negative component of the INPUT DATA "1" pulse). Following the first pulse, a waiting period where no information is sent occurs (the time period between the INPUT DATA "1" biphasic pulse and the INPUT DATA "0" biphasic pulse). After the waiting period, a second biphasic pulse is transmitted having a third portion of the second polarity (the negative component of the INPUT DATA "0" pulse) and a fourth portion with the first polarity (the positive component of the INPUT DATA "0" pulse).

(Answer 6-7.) The Appellant argues, "Perhaps more importantly, it should be noted that Gord does not teach alternating the biphasic pulses." (Br. 5; Reply Br. 1.) Therefore, the issue is whether Gord teaches a first biphasic pulse followed by a second biphasic pulse of opposite polarity.

In addressing an obviousness issue, the Board conducts a two-step analysis. First, we construe the representative claim at issue to determine its scope. Second, we determine whether the construed claim would have been obvious.

A. CLAIM CONSTRUCTION

Our analysis begins with construing the claim limitations at issue. During the examination process, "the PTO gives claims their 'broadest reasonable interpretation.'" *In re Bigio*, 381 F.3d 1320, 1324, 72 USPQ2d 1209, 1211 (Fed. Cir. 2004) (quoting *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1668 (Fed. Cir. 2000)). "Moreover, limitations are not to be read into the claims from the specification." *In re Van Geuns*, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993) (citing *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)).

Here, claim 19 recites in pertinent part the following limitations:

> generating a first biphasic pulse having a first portion of a first polarity followed by a second portion of a second polarity;
>
> . . .; and
>
> generating a second biphasic pulse following the period of time, the second biphasic pulse having a third portion of the second polarity followed by a fourth portion of the first polarity.

Giving the representative claim the broadest, reasonable construction, we agree with the Examiner that "[t]he claim[ ] recite[s] the limitation of one biphasic pulse followed by a second biphasic pulse of opposite polarity. The pending claim[ ] only claim[s] these two pulses." (Answer 8.) In other words, claim 19 does not require more than one pair of such pulses because "[t]he preceding pulses and the subsequent pulses are not claimed." (*Id.*)

B. OBVIOUSNESS ANALYSIS

Having determined what subject matter is being claimed, the next inquiry is whether the subject matter would have been obvious. An invention that would have been obvious is unpatentable. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) any secondary considerations in evidence. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966).

"'A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art.'" *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)). *See also In re Fridolph*, 134 F.2d 414, 416, 57 USPQ 122, 124 (CCPA 1943) ("In considering more than one reference . . . the question always is: does such art suggest doing the thing which the appellant has done?").

One skilled in the art learns the following from Gord. The reference "provides a means whereby implantable sensors or stimulators may be daisy chained together over a common power/data bus using a minimum number

of connecting conductors, e.g., two. . . ." (Col. 20, ll. 43-46.) More specifically, the reference's Figure 8 follows.

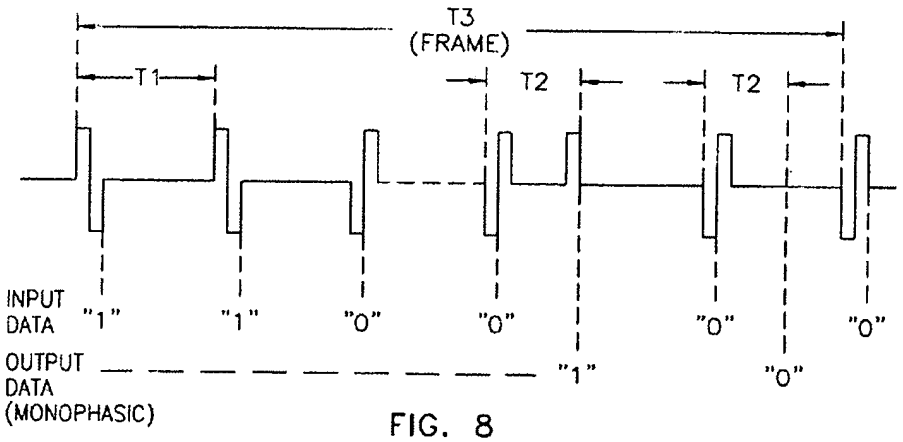


FIG. 8

"FIG. 8 is a timing diagram that illustrates time multiplexed input and output data within a data frame as it appears on the two-conductor bus connecting a plurality of daisy-chainable devices. . . ." (Col. 6, ll. 30-33.) The Appellant recognizes that the Examiner is "relying on a single transmission by Gord of a '1' followed by a '0'. . . ." (Reply Br. 2.) More specifically, the Examiner relies on the second and third bits of the input data shown in Figure 8 of Gord. The Examiner's finding, *supra*, that the second and third bits respectively constitute a first biphasic pulse followed by a second biphasic pulse of opposite polarity is uncontested. We note that the Appellant admits, "Clearly this would occur in Gord when Gord is transmitting meaningful data." (Reply Br. 2.)

Despite the admission, the Appellant alleges, "The claims require that the first and second bi-phasic pulses are opposite to one another. This would require, in terms of Gord, that Gord transmits 1010101010," (Br. 5), "and there is no teaching in Gord to provide this bit pattern." (*Id.*) In other words, the Appellant argues that Gord does not teach five pairs of bi-phasic pulses opposite to one another. Contrary to the Appellant's argument, however, the representative claim does not require more than one pair of such pulses. Therefore, the argument is unpersuasive.

IV. REASON TO COMBINE PRIOR ART TEACHINGS

The Examiner makes the following findings.

> It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the pulse position modulation system for encoding additional data bits as stated by Vanderpool into the system of Gord. Each possible choice, for the data pulse, of delay time and transmission code may represent a separate set of multiple data bits (column 2, lines 3-5). Therefore, more information can be transmitted than before during the same transmission period.

(Answer 4-5.) The Appellant alleges "that giving Gord and Vanderpool to a person of ordinary skill in the art, there would be no motivation, teaching or suggestion for combining them." (Br. 6.) Therefore, the issue is whether the Appellant has shown that the Examiner erred in finding that there is a suggestion to combine teachings from Gord and Vanderpool.

The question of whether the prior art contains a reason to combine teachings is a question of fact. *In re Gartside*, 203 F.3d 1305, 1316,

53 USPQ2d 1769, 1776 (Fed. Cir. 2000) (citing *In re Dembiczak*, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999)). "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR*, 127 S.Ct. at 1739, 82 USPQ2d at 1395. Nevertheless, "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *Id.* at 1741, 1396.

Here, the Examiner found reasons to combine teachings from Gord and Vanderpool (1) in the references themselves, (2) in the ordinary knowledge of those skilled in the art, and (3) from the nature of a problem to be solved. More specifically, its *Description of Related Art*, Vanderpool explains that "[i]n pulse-position modulation, a time delay between a first pulse and a second pulse is used to encode data," (col. 1, ll. 10-11); "[s]uccessive time delays between successive pulses may be used to encode a stream of data bits." (*Id.* ll. 14-16.) The Examiner explained that one skilled in the art, based on the prior art, would have understood that employing pulse-position modulation into the system of Gord would have enabled "more information [to] be transmitted than before during the same transmission period." (Answer 5.)

Furthermore, by disclosing a data transmission scheme that "allows data to be received much faster from a given device," (col. 17, ll. 37-38), Gord recognizes the advantage of transmitting data at a high data rate. As

noted by the Examiner, (Req. Reh'g 7), Vanderpool discloses, "Pulse-position modulation would appear well suited to a high data rate." (*Id.* ll. 38-39.) Because Gord recognizes an advantage, and Vanderpool discloses a modulation scheme that provides that advantage, we agree with the Examiner that one skilled in the art would have had sufficient reason to combine teachings from Gord and Vanderpool.

In addition, Gord recognizes a problem with multiple sensors/ stimulators. Specifically, "the output signal from many sensors, i.e., the signal that provides a measure of the parameter or substance being monitored or sensed, is typically a very low level analog signal. . . ." (Col. 2, ll. 55-57.) "[S]uch low level signals are easily corrupted with noise, particularly when the conductors are placed in a very hostile environment (e.g., within living tissue, which is equivalent to being immersed in salt water). Low level signals in a hostile environment result in a signal-to-noise (S/N) ratio that is unacceptably low." (*Id.* ll. 59-64.)

As noted by the Examiner, (Req. Reh'g 7), Vanderpool discloses a solution to the problem of noise. More specifically, "it would be advantageous to transmit data in a noisy environment. . . ." (Col. 1, ll. 46-47.) Because Gord recognizes a problem, and Vanderpool discloses a solution to thereto, we agree with the Examiner that one skilled in the art would have had sufficient reasons to combine teachings from Gord and Vanderpool.

The Appellant has not cogently addressed, let alone shown error in, the Examiner's findings and analysis addressing reasons to combine teachings of Gord and Vanderpool. Furthermore, we agree with the Examiner that the ability to transmit more data, the suitability of pulse-position modulation for a high data rate, and the suitability of pulse-position modulation for a noisy environment would have provided one skilled in the art with sufficient reasons to combine teachings from Gord and Vanderpool.

V. OTHER ISSUES NOT ARGUED

The dissent makes the following three arguments. (1) "Only a single bit of data in each of the delay time periods is taught by Vanderpool. Thus, the Examiner's rationale that 'more information can be transmitted than before during the same transmission period' does not make technical sense, and is counter to the teachings of Vanderpool." (Analysis.) (2) "Even if we assume for the sake of argument that Vanderpool does teach 'multiple data bits' in the delay time period, such a teaching can not be used in Gord because Gord expressly teaches that only a single output data pulse is time-division multiplexed during the delay period between the two input pulses." (*Id.*) (3) Combining Gord and Vanderpool would "modify a reference so that it will not properly function in the manner set forth in its disclosure." (*Id.*)

As will become apparent *infra*, the dissent assumes and takes on the role of an advocate for the Appellant. We respectfully disagree with the dissent and submit that it is up to the Appellant, not the Examiner and

individual members of the Board, to make the arguments upon which the Appellant seeks a patent.

The principal problem with the dissent's arguments is that they overlook a rule of practice promulgated by the Director of the United States Patent and Trademark Office for the conduct of business before the Office and, in the case of an appeal, business before the Examiner and the Board. The rule of practice is clear: "Any arguments or authorities not included in the brief or a reply brief filed pursuant to [37 C.F.R.] § 41.41 will be refused consideration by the Board, unless good cause is shown." 37 C.F.R. § 41.37(c)(1)(vii).

Our rule is similar to practice in our appellate reviewing court. "It is not the function of [the U.S. Court of Appeals for the Federal Circuit] to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art." *In re Baxter Travenol Labs.*, 952 F.2d 388, 391, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991). *Cf. In re Watts*, 354 F.3d 1362, 1367, 69 USPQ2d 1453, 1457 (Fed. Cir. 2004) ("[I]t is important that the applicant challenging a decision not be permitted to raise arguments on appeal that were not presented to the Board.")

The Director-promulgated rule is based on at least three principles. First, for the Board to consider arguments not made by an appellant is administratively inefficient. Second, both the Examiner and the Board are entitled to presume that arguments not made by an appellant are not made

because the appellant does not want to rely on an unmade argument for patentability. Third, advancing an argument omitted by the appellant is administratively unfair to the examiner and also entails the risk of an improvident or ill-advised opinion because the examiner may have had a response had the argument been made by the appellants.

Here, the three "rationales" relied upon by the dissent were not presented by the Appellant in the briefs. Consequently, these three arguments are neither before us, nor at issue, but are considered waived.

VI. ORDER

For the aforementioned reasons, we grant the Examiner's request to affirm the rejection of claim 19 and of claims 20-22, 24, and 25, which fall therewith. Rather than arguing the rejection of claim 23, the Appellant relies on the aforementioned arguments and allegations. Unpersuaded thereby, we also grant the Examiner's request to affirm the rejection of this claim.

No time for taking any action connected with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

HAIRSTON, dissenting opinion

ON REQUEST FOR REHEARING

STATEMENT OF THE CASE

In a decision dated September 14, 2006, the Board reversed the obviousness rejections of claims 19 to 25 because impermissible hindsight reconstruction was used to demonstrate the obviousness of the claimed subject matter.

The Examiner has requested rehearing of the decision because "the justification for combining the pulse position encoding of Vanderpool into the system of Gord" is that "[m]ore information can be transmitted than before during the same transmission period because Vanderpool disclose the delay time may represent a separate set of multiple bits in column 2, lines 3-5 opposed to the zero bits being transmitted in the delay time of Gord" (Request 7).

ISSUE

Did the Examiner rely on impermissible hindsight to demonstrate the obviousness of the claimed subject matter?

FINDINGS OF FACT

Appellant has invented a method of transmitting biphasic pulses with variable delay times (i.e., T1 to T4) between the pulses (Figure 2(b)). As seen in the figure, the polarity of the trailing edge of a biphasic pulse is the

same polarity as the leading edge of the immediately following biphasic pulse. The same figure shows the variable time delays T1 to T4 between the biphasic pulses. Each of the time delays represents two data bits (i.e., T1 represents the two data bits "00," T2 represents the two data bits "01," T3 represents the two data bits "10," and T4 represents the two data bits "11") (Specification 3 to 5; Figures 1 and 2(b)).

Claim 19 on appeal is directed to two of the biphasic pulses with a time period between the two pulses "selected to represent a plurality of data bits."

Claim 19 reads as follows:

19. A method for encoding data bits for transmission comprising:

generating a first biphasic pulse having a first portion of a first polarity followed by a second portion of a second polarity;

waiting a period of time following the second portion of the first biphasic pulse during which period of time no amplitude dependent data bits are encoding, the duration of the period of time being selected to represent a plurality of data bits; and

generating a second biphasic pulse following the period of time, the second biphasic pulse having a third portion of the second polarity followed by a fourth portion of the first polarity.

The Examiner rejected claims 19 to 22, 24 and 25 under 35 U.S.C. § 103(a) based upon the teachings of Gord (U.S. Patent No. 5,999,848) in view of Vanderpool (U.S. Patent No. 5,654,978), and the Examiner rejected

claim 23 under 35 U.S.C. § 103(a) based upon the teachings of Gord, Vanderpool and Pernyeszi (U. S. Patent No. 5,969,547) (Answer 4 to 6).

The original panel made the finding that "[a]lthough Gord shows a biphasic pulse (i.e., input data bit 1) with a lagging end that has the same polarity as the leading end of the next biphasic pulse (i.e., input data bit 0), the period of time between the biphasic pulses is not used for encoding purposes" (Decision 2). Thus, I do not take issue with the findings by the majority in the response to the request that claim 19 "recite[s] the limitation of one biphasic pulse followed by a second biphasic pulse of opposite polarity," and that "the representative claim does not require more than one pair of such pulses."

The Examiner acknowledged "Gord does not disclose the duration of the waiting a time period being selected to represent a plurality of data bits" (Answer 4).

The Examiner contended (Answer 4 and 5) that:

> Vanderpool teaches a method of encoding information in a pulse position modulation system. A time delay between a first pulse and a second pulse is used to encode data. For example, a short time delay between the first and second pulses may indicate a logical "0", while a longer delay may be used to encode a logical "1" as stated in claim [sic, column] 1, lines 10-18. The delays can represent a plurality of data bits (column 3, lines 8-17 and column 5, lines 37-40). Figures 2-4 show the pulses are detected at a time after the first pulse is

> transmitted. Figure 4 shows the use of biphasic pulses in the transmission system. It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the pulse position modulation system for encoding additional data bits as stated by Vanderpool into the system of Gord. Each possible choice, for the data pulse, of delay time and transmission code may represent a separate set of multiple data bits (column 2, lines 3-5). Therefore, more information can be transmitted than before during the same transmission period.

Appellant contended *inter alia* that the rejection seeks to replace the fixed time between the pulses in Gord with the variable time between the pulses in Vanderpool, and that there is a lack of a motivation, teaching or suggestion to combine the teachings of the references (Br. 5 and 6). Appellant also contended that "[m]erely taking two consecutive pulses from one patent and combining it with another without some justification for this combination is inconsistent with an obvious[ness] rejection" (Reply Br. 2).

As indicated *supra*, the Examiner now contends that the referenced teachings in Vanderpool provide for delay times between pulses that represent "multiple bits" of data (Request 7).

PRINCIPLES OF LAW

"One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

In an obviousness rejection, it is impermissible "to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." *In re Wesslau*, 353 F.2d 238, 241, 147 USPQ 391, 393 (CCPA 1965).

ANALYSIS

In Gord, the last two input pulses in Figure 6, and the second and third input data pulses in Figure 8 are biphasic pulses that show the polarity of the trailing edge of the first pulse being the same polarity as the leading edge of the immediately following pulse. A fixed time period between two input biphasic pulses is provided so that a single output pulse may be time-division multiplexed between the two biphasic input pulses (Figure 6; col. 16, ll. 59 to 63). The majority's response to the request recognizes that Gord teaches "time multiplexed input and output data within a data frame."

Vanderpool recognizes that a short time delay between pulses can be used to represent a logical "0," and a long time delay between pulses can be used to represent a logical "1" (col. 1, ll. 10 to 14). Vanderpool describes several embodiments in which more than one spread-spectrum code is used in the system (Figures 3 and 4; col. l. 54 to col. 4, l. 51). Data pulses 205 would exist on each of the plurality of spread-spectrum codes 301, and delay times would exist on each of the plurality of spread-spectrum codes. The multiple data bits described in column 2, lines 3 to 5, and referenced by the Examiner as motivation for the combination of references, is referring to the

possible choices the system designer has in choosing how many data pulses 205 are provided from the transmitter 101 to the receiver 108 (Figure 1; col. 4, ll. 1 to 52). In other words, the phrase "multiple data bits" mentioned in column 2, lines 3 to 5 is referring to the data pulses 205, and not to the "delay time" between the data pulses.

In summary, the Examiner's contention throughout the Request that the delay time between pulses in Vanderpool can represent a separate set of "multiple data bits" is counter to the teachings found in the background and the preferred embodiments of Vanderpool. Only a single bit of data in each of the delay time periods is taught by Vanderpool. Thus, the Examiner's rationale that "more information can be transmitted than before during the same transmission period" does not make technical sense, and is counter to the teachings of Vanderpool.

Even if we assume for the sake of argument that Vanderpool does teach "multiple data bits" in the delay time period, such a teaching can not be used in Gord because Gord expressly teaches that only a single output data pulse is time-division multiplexed during the delay period between the two input pulses. It is impermissible to modify a reference so that it will not properly function in the manner set forth in its disclosure.

CONCLUSION

The majority now seeks to use a nonsensical technical argument made by the Examiner as "[a] reason to combine teachings" from the prior art

under the recently issued U.S. Supreme Court decision in *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007). The majority states that "[t]he Appellant has not cogently addressed, let alone shown error in, the Examiner's findings and analysis addressing reasons to combine teachings of Gord and Vanderpool." I disagree. As indicated *supra*, Appellant seasonably challenged the Examiner's use of two disparate delay time periods (i.e., "the fixed time period between the pulses in Gord" and the "variable time period between the pulses in Vanderpool"). The Appellant also argued that the mere taking of two consecutive pulses from one patent and combining them with pulses from another patent is not "justification" for an obviousness determination (Reply Br. 2).

The majority indicates that fast or high data rates are common teachings in Gord and Vanderpool. The relevance of this common teaching eludes me since the transmission of data at a higher rate is the desire of every data transmitting entity. The mere fact that both references are after the same goal does not mean that the two different transmission systems are interchangeable, or that the teachings of one lend themselves to the teachings of the other.

The majority recognizes that noise is a problem in both references. Vanderpool's solution to noise in a spread-spectrum communication system has nothing to do with the noise on conductors that connect

sensors/stimulators in Gord. Noise[2] is not a common problem that gives the skilled artisan a reason to combine the teachings of Gord and Vanderpool.

The majority indicates that the Appellant did not show error in "the Examiner's findings and analysis addressing reasons to combine teachings of Gord and Vanderpool," and that "the dissent assumes and takes on the role of an advocate for the Appellant." I disagree with the majority. The Appellant seasonably challenged the Examiner's positions in the brief and the reply brief as indicated *supra*. My analysis of the disparate teachings in the references only serves to prove that Appellant correctly argued that the combination of reference teachings "makes no sense" (R. Br. 2).

I would deny the Examiner's request for Rehearing[3] because the original panel did not err in finding that impermissible hindsight was used by the Examiner to demonstrate the obviousness of the claimed subject matter.

KIS

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[2] The Examiner did not make any findings concerning noise.

[3] As an aside, I believe that the majority's decision to grant the Examiner's request will send the wrong message to the Examining Corps that any reasoning, whether plausible or not, will serve as justification for a combination of reference teachings. I do not believe that was the intent of the decision in *KSR*.

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